Petr Stepanov

Material Scientist. Nuclear Chemist.

stepanovps@gmail.com 419-496-86-02 petrstepanov.com scholar.petrstepanov.com

Objective

Highly motivated experimental scientist with expertise in gamma spectroscopy, positron annihilation spectroscopy, microscopy and nuclear physics. A strong background in computational techniques, web and desktop software development.

Currently I am actively looking for jobs in following areas: physics, chemistry and computer science. I have an authorization to work in US on Optional Practical Training (OPT). Alternatively, I will consider H1B Visa sponsorship offers.

Education

Bowling Green State University Aug 2014 → now

Doctor of Philosophy in photochemical sciences.
Dissertation topic: Development of positron annihilation spectroscopy: from experimental setups to advanced processing software.

National Research Nuclear University Sep 2004 → Feb 2011

Bachelor and Master of Science in solid state physics.

Thesis topic: Radiation defect studies of nuclear power plant vessel steels by means of positron lifetime annihilation spectroscopy.

Work experience

Research Assistant, Software Developer Sept 2014 → now

@Bowling Breen State University, Ohio (United States)

Material science research, interaction of ionizing radiation with matter, radiation defects in solids, radiation chemistry. Gamma-spectroscopy. Positron annihilation spectroscopy. Maintaining and tune-up of fast-timing ORTEC electronics. Manufacturing of the radioactive positron sources.

Developing desktop software solutions (C++, ROOT) for acquisition, storing and treatment of raw experimental data and development and verification of theoretical models. Developing websites for research groups and international meetings and conferences.

Computer Science Teacher Apr 2011 → May 2013

@Phys-Tech College at Moscow Institute of Physics and Technology

Provided instruction and guidance to high school students on following computer courses: advanced C++ programming, markup on the web, Photoshop and 3D Studio Max.

Research Scientist Sep 2008 → Apr 2011

@Institute for Theoretical and Experimental Physics

Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.

Featured Publications

- Stepanov, P.; Stepanov, S.; Byakov, V.; Selim, F. Developing New Routine for Processing Two-Dimensional Coincidence Doppler Energy Spectra and Evaluation of Electron Subsystem Properties in Metals. *Acta Physica Polonica A* **2017**, *132* (5), 1628–1633 DOI: 10.12693/aphyspola.132.1628.
- Ji, J.; Colosimo, A. M.; Anwand, W.; Boatner, L. A.; Wagner, A.; Stepanov, P. S.; Trinh, T. T.; Liedke, M. O.; Krause-Rehberg, R.; Cowan, T. E.; et al. ZnO Luminescence and scintillation studied via photoexcitation, X-ray excitation and gamma-induced positron spectroscopy. *Scientific Reports* **2016**, *6* (1) DOI: 10.1038/srep31238.

Full list of publications is posted on my Google Scholar page.

Skills

Characterization facilities

Positron Lifetime and Doppler Broadening Annihilation Spectroscopy (PALS, DBAR). Atom Probe Tomography (ATP). Scanning Electron Microscopy (SEM). Transmission electron microscopy (TEM). Atomic Force Microscopy (AFM). UV-VIS Spectroscopy. Fourier Transform Infrared Spectroscopy (FTIR).

Material processing

High-temperature annealing. Wet chemical etching. Electrical Contact Fabrication. Sample polishing.

Software

Scientific packages: Wolfram Mathematica, Maple, MATLAB.

Markup: LaTeX, HTML & CSS, MS Office Suite, Zotero.

Data plotting: OriginLab, Gnuplot, Grapher, Adobe Products.

Desktop development

Java and Swing, C/C++ and Qt, GNU Automake, CERN ROOT Framework, PHP, Fortran.

Conferences

18th International Conference on Positron Annihilation (ICPA-18) Aug 2018

@Orlando, FL, USA

Oral talk “Positions and Ps in Al2O3 Nanopowders”.

International Workshop on Physics with Positrons (JPos17) Sept 2017

@Jefferson Lab, Newport News, VA, USA

Poster “A routine of background subtraction from two-dimensional Doppler broadened spectra”.

12th International Workshop on Positron and Positronium Chemistry (PPC12) Sept 2017

@Maria Curie-Sklodowska University, Lublin, Poland

Poster “Developing new routine for processing two-dimensional coincidence Doppler energy spectra”.

Ohio Photochemical Society Meeting (Oops) May 2017

@Maumee Bay Lodge & Conference Center, Maumee, OH, USA

Poster “Developing new routine for background subtraction in two-dimensional coincidence Doppler broadening spectroscopy”.

58th Electronic Materials Conference (EMC) Jun 2016

@University of Delaware, Newark, DE, USA

Oral talk “High-Sensitivity Measurements of Defects in ZnO by Means of Digital Coincidence Doppler Broadening of Positron Annihilation Spectroscopy”.

Annual Spring Meeting of the APS Ohio-Region Apr 2016

@University of Delaware, Newark, DE, USA

Oral talk “Identification of chemical environment of defects in ZnO by means of digital coincidence Doppler broadening of positron annihilation radiation”.

Ohio Inorganic Weekend Nov 2015

@Bowling Green State University, OH, USA

Poster “Approaching Structural Defect Characterization and their Chemical Identification by Means of Coincidence Doppler Broadening of Annihilation Radiation”

41st Polish Seminar on Positron Annihilation (PSPA-13) Sep 2013

@Maria Curie-Sklodowska University, Lublin, Poland

Oral talk “Application of positron spectroscopy for detection of nanostructures in alchohol—aqueous mixtures”.

Professional Associations

American Physical Society since 2016 → now)

The Ohio Academy of Science (2016 → now)

Interests

Snowboarding, rollerblading, hiking, fixing cars, working on bicycles, footbag.